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ABSTRACT

This study, part of a larger project called "Project Competence," explored the relationship between two aspects of social-cognitive ability (interpersonal awareness and social problem-solving) and three aspects of manifest competence in children (social, behavioral, and academic). In a series of hierarchical multiple regressions, social- cognitive factors made significant and substantial contributions to the prediction of social competence, beyond what was already accounted for by age, sex, and intellectual functioning. Its independent explanatory power was somewhat less for behavioral competence, and minimal for academic competence. Two significant interaction effects were also observed: (1) increasing family stress scores were associated with decreasing levels of behavioral competence in the context of poor interpersonal awareness, but were unrelated in the context of mature awareness; and (2) increasing family stress scores were associated with decreasing levels of academic competence in the context of below-average intellectual functioning, but were associated with increasing academic competence in the context of above-average intellectual functioning. While methodological limitations necessitate interpretive caution, these two interactions offer clues to the nature of stress-resistance in children. (Author/MP)

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# THE SOCIAL-COGNITIVE QUALITIES OF STRESS-RESISTANT CHILDREN

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# THE SOCIAL-COGNITIVE QUALITIES OF STRESS-RESISTANT CHILDREN

David Stephen Pellegrini

As many of you surely know, developmental research has yielded a rich body of data regarding the cognitive development of children, and the growth in their understanding of the physical world. Until recently, however, substantially less energy has been directed toward uncovering how children come to view the social world. The past two decades have seen a true burgeoning of interest in the nature of social cognition--this is, in how children comprehend or think about human beings and their affairs, and how they apply this knowledge in the context of social interaction.

This portion of Project Competence was intended principally to explore the relationship between social-cognitive ability and manifest competence. Two major research questions interested me and guided my research: First of all, what contribution does social-cognitive ability make in accounting for the observed variance in manifest competence? Do social-cognitive factors add anything new above and beyond the explanatory power of simple intellectual ability, which we know to be a powerful explanatory variable in and of itself? Secondly, is the relationship between stressful family life events and competence a conditional one, which varies as a function of social-cognitive ability, or as a function of intellectual ability, sex, or age? The uncovering of significant interaction effects between stress and the major independent variables of interest might provide clues to the nature of stress-resistance and important protective factors in the lives of children.

Methods

All 100 children who comprised the School A sample at the time were evaluated with regard to two aspects of social-cognitive functioning. First of all, borrowing from the work of Selman, children were assessed with regard to the maturity of their ideas about people, friendship, and group organization. For each of these domains of social reasoning children were presented with an interpersonal dilemma in audio-visual filmstrip format. For example, in the friendship dilemma, two girls who are best of friends must make room in their circle for a new girl. Following the presentation of each dilemma a structured clinical interview was utilized to probe the maturity of children's ideas about the social world. A variety of issues were explored for each of the three domains of social reasoning. For example, what kind of person makes a good friend? And what is the function of trust and loyalty in a friendship? Employing a structural-developmental model developed by Selman and his colleagues, responses to each interview question were scored and averaged to determine the maturity of interpersonal awareness.

A second, presumably related component of social cognition was also assessed, namely, social problem-solving ability. A modified version of Spivack and Shure's Means-Ends Problem-Solving Test was employed for this purpose. This is a story-telling technique in which the child is presented the beginning of a story and the end of the story, but the middle progression from one point to the finale is left open. The child's task is to tell what happens in between. In the child's response an effort is made to identify some of the hypothesized components of the

social problem-solving process, such as the generation of means to achieve a given social goal, and the awareness of obstacles which might block goal attainment.

In addition to these two components of social-cognitive functioning, two subtests of the WISC-R - Vocabulary and Block Design - were employed to estimate intellectual ability.

Data analysis was accomplished by means of hierarchical multiple regression techniques (Cohen and Cohen, 1975) in which the three dimensions of competence - social, behavioral, and academic - constituted the dependent variables.

Results and discussion

Despite an unfortunate restriction in range with respect to both competence and life stress (i.e., the sample appeared to be somewhat more competent and less stressed than the original cohort), some interesting findings emerged. First of all, social-cognitive ability, particularly as indexed by performance on the Means-Ends Problem-Solving Test, does indeed make a significant contribution to the prediction of manifest competence, above and beyond what can be accounted for by sex, age, and intellectual ability alone. Its explanatory power appears to be greatest with regard to social competence, followed by behavioral competence, and is weakest with regard to academic competence.

With regard to social competence an interesting divergence of results can be observed. Intellectual ability bears only a modest relationship to positive peer status ($r=.26, p<.001$), (the correlation being .26). Thus, the maturity of interpersonal awareness and social problem-solving

ability considered together provide an increment of 20 1/2% in $R^2$, above and beyond the variance accounted for by intellectual ability. However, intellectual ability is somewhat more closely related to negative peer status ($r=-.45$, $p<.001$). When the two social-cognitive variables are subsequently added to this hierarchical regression equation, their contribution is subsequently more modest, accounting for an additional 7% in $R^2$.

These results suggest that the factors which account for positive peer status are complex and multiply-determined. To become popular or well-thought-of by your peers may require more than simply avoiding the behaviors or attributes which lead to unpopularity. There are probably specific relationship-building behaviors which are important in this process, and social-cognitive factors may partly underlie these behaviors.

Social-cognitive factors make a significant contribution to the prediction of <u>behavioral</u> competence, as well, accounting for an increment of 12.6% in $R^2$ above and beyond that which is accounted for by sex, age, and intellectual ability. With regard to <u>academic</u> competence, however, social-cognitive factors have little to add, accounting for an increment of only 4% in explainable variance once intellectual functioning is considered. While correlational research such as this clearly does not allow for causal interpretations, these results are at least <u>consistent</u> with the notion that interpersonal awareness and social problem-solving ability may play a formative role in the development of competence during middle childhood.

Two significant interaction effects also provide some clues to

the nature of stress resistance in children. First of all, a significant interaction is noted between interpersonal awareness and family life stress with respect to behavioral competence. Here, decreasing levels of behavioral competence are associated with increasing family stress scores only in the context of poor interpersonal awareness. In the context of mature interpersonal awareness, a slight increase in the level of behavioral competence can be observed with increasing stress scores.

A similar pattern emerges with respect to academic competence, this time with regard to intellectual ability. Here, decreasing levels of academic competence are associated with increasing family life stress scores only in the context of below-average intellectual performance on the two WISC-R subtests. When intellectual performance is above average, increasing stress is actually associated with an enhancement of academic competence.

Interpretations here must be even more cautious. As my colleagues have already noted, we must be particularly mindful of the limitations of the life events inventory approach to measuring stress to begin with, despite the popularity of the method. For example, we must first document the life events which comprise the family life stress scores and their presumed impact on children. We must also explore their contextual aspects through detailed family interviewing, before a great deal is made of these two lonely interaction effects. Thus, following the completion of Linder's analysis of the lengthy clinical interviews, the present data set will be reanalyzed, and new stress scores will be employed which take into account a more comprehensive and informal survey of

family life events and their important contextual components. Should these interactions hold up, or others arise, additional longitudinal research and experimental manipulations will surely be necessary to determine whether interpersonal awareness, intellectual ability, or other attributional qualities such as social problem-solving ability truly moderate the potentially deleterious effects of family life stress on children.

TABLE 1

Correlations Between Interpersonal Awareness and Manifest Competence

| | Positive Sociometric Status | Negative Sociometric Status | Behavioral Competence | Academic Competence |
|---|---|---|---|---|
| Persons | .29** | -.33*** | .14 | .40*** |
| Friendship | .32*** | -.41*** | .25** | .52*** |
| Group Organization | .39*** | -.37*** | .20* | .58*** |
| Global Awareness | .38*** | -.42*** | .23* | .58*** |

Significance with two-tailed test:

*p < .05
**p < .01
***p < .001

TABLE 2

Correlations Between Social Problem-Solving Ability and Manifest Competence

| | Positive Sociometric Status | Negative Sociometric Status | Behavioral Competence | Academic Competence |
|---|---|---|---|---|
| Means (M) | .53*** | -.44*** | .41*** | .47*** |
| Obstacles (O) | .29** | -.31*** | .23** | .26** |
| Time (T) | .52*** | -.30*** | .29** | .31*** |
| MOT | .52*** | -.43*** | .39*** | .44*** |

Significance with two-tailed test:

*p <.05
**p <.01
***p <.001

TABLE 3

The Correlation Between Interpersonal Awareness and Social Problem-Solving Ability

| | Persons | Friendship | Group Organization | Global Awareness |
|---|---|---|---|---|
| Means (M) | .47*** | .37*** | .43*** | .42*** |
| Obstacles (O) | .35*** | .22* | .26** | .29** |
| Time (T) | .43*** | .28** | .37*** | .38*** |
| MOT | .48*** | .35*** | .35*** | .45*** |

Significance with two-tailed test:

*p < .05
**p < .01
***p < .001

TABLE 4

Independent Variables Entered in Hierarchical Multiple Regression Set A for Each Dependent Variable

| Step | Type of Entry | Independent Variable |
|---|---|---|
| 1 | Hierarchical | Sex |
| 2 | Hierarchical | Age |
| 3 | Hierarchical | Intelligence |
| 4 | Hierarchical | Global Interpersonal Awareness |
| 5 | Hierarchical | General Social Problem-Solving Ability |
| 6 | Hierarchical | Stress |
| 7 | Stepwise | Sex x Stress |
| | | Age x Stress |
| | | Intelligence x Stress |
| | | Global Interpersonal Awareness x Stress |
| | | General Social Problem-Solving Ability x Stress |
| | | Global Interpersonal Awareness x General Social Problem-Solving Ability |
| 8 | Stepwise | Sex x Global Interpersonal Awareness x Stress |
| | | Sex x General Social Problem-Solving Ability x Stress |
| | | Sex x Intelligence x Stress |
| | | Intelligence x Global Interpersonal Awareness x Stress |
| | | Intelligence x General Social Problem-Solving Ability x Stress |
| | | Global Interpersonal Awareness x General Social Problem-Solving Ability x Stress |
| | | Intelligence x Global Interpersonal Awareness x General Social Problem-Solving Ability |

TABLE 5

Results of Multiple Regression Analysis Set A for the Prediction of Positive Sociometric Status

DEPENDENT VARIABLE--POSITIVE SOCIOMETRIC STATUS

| Step | Independent Variable | Simple r | F | Signif. Level | Multiple r | r Square | Adjusted r Square | r Square Change | Overall F | Overall Signif. Level |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Sex | .01 | .00 | .957 | .01 | .00 | -.01 | .000 | .00 | .957 |
| 2. | Age | .04 | .12 | .732 | .04 | .00 | -.02 | .001 | .06 | .941 |
| 3. * | Intelligence | .26 | 7.10 | .000 | .27 | .07 | .04 | .073 | 2.41 | .072 |
| 4. * | Interpersonal Awareness | .37 | 7.93 | .006 | .39 | .15 | .11 | .076 | 3.93 | .006 |
| 5. * | Social Problem-Solving | .50 | 15.80 | .001 | .53 | .28 | .24 | .129 | 6.93 | .001 |
| 6. * | Stress | -.34 | 9.97 | .002 | .59 | .35 | .31 | .074 | 7.93 | .001 |
| 7. | Social Problem-Solving x Stress | | 3.30 | .073 | .61 | .38 | .33 | .024 | 7.45 | .001 |
| | Social Problem-Solving x Interpersonal Awareness | | 2.57 | .113 | .63 | .40 | .34 | .018 | 6.96 | .001 |
| | Interpersonal Awareness x Stress | | .75 | .390 | .63 | .40 | .34 | .005 | 6.25 | .001 |
| | Intelligence x Stress | | .22 | .640 | .63 | .40 | .33 | .002 | 5.50 | .001 |
| | Age x Stress | | .18 | .670 | .64 | .40 | .32 | .001 | 5.05 | .001 |
| | Sex x Stress | | .02 | .880 | .64 | .40 | .32 | .000 | 4.58 | .001 |

*Independent variable making a statistically significant contribution to the prediction of positive sociometric status.

TABLE 6

Results of Multiple Regression Analysis Set A for the Prediction of Negative Sociometric Status

DEPENDENT VARIABLE--NEGATIVE SOCIOMETRIC STATUS

| Step | | Independent Variable | Simple r | F | Signif. Level | Multiple r | r Square | Adjusted r Square | r Square Change | Overall F | Overall Signif. Level |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | | Sex | -.17 | 2.61 | .110 | .17 | .03 | .02 | .028 | 2.61 | .110 |
| 2. | | Age | -.01 | .03 | .873 | .17 | .03 | .01 | .000 | 1.30 | .277 |
| 3. | * | Intelligence | -.45 | 31.02 | .001 | .53 | .28 | .25 | .249 | 11.40 | .001 |
| 4. | * | Interpersonal Awareness | -.42 | 4.03 | .048 | .56 | .31 | .28 | .031 | 9.02 | .001 |
| 5. | * | Social Problem-Solving | -.44 | 5.33 | .023 | .59 | .35 | .31 | .040 | 9.39 | .001 |
| 6. | | Stress | .03 | .03 | .869 | .59 | .35 | .30 | .000 | 7.74 | .001 |
| 7. | * | Social Problem-Solving x Interpersonal Awareness | | 5.67 | .020 | .62 | .39 | .34 | .040 | 7.80 | .001 |
| | | Sex x Stress | | .74 | .394 | .63 | .39 | .34 | .005 | 6.99 | .001 |
| | | Intelligence x Stress | | .55 | .460 | .63 | .40 | .33 | .004 | 6.16 | .001 |
| | | Interpersonal Awareness x Stress | | 1.16 | .285 | .64 | .41 | .33 | .008 | 5.67 | .001 |
| | | Age x Stress | | .97 | .327 | .64 | .41 | .33 | .007 | 5.24 | .001 |
| | | Social Problem-Solving | | 1.28 | .261 | .65 | .42 | .34 | .009 | 4.93 | .001 |

*Independent variable making a statistically significant contribution to the prediction of negative sociometric status.

TABLE 7

Results of Multiple Regression Analysis Set A for the Prediction of Behavioral Competence

DEPENDENT VARIABLE--BEHAVIORAL COMPETENCE

| Step | | Independent Variable | Simple r | F | Signif. Level | Multiple r | r Square | Adjusted r Square | r Square Change | Overall F | Overall Signif. Level |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | * | Sex | .37 | 14.14 | .001 | .37 | .13 | .12 | .133 | 14.14 | .001 |
| 2. | | Age | -.01 | .01 | .926 | .37 | .13 | .11 | .000 | 7.00 | .001 |
| 3. | | Intelligence | .10 | 3.62 | .060 | .41 | .17 | .14 | .033 | 6.01 | .001 |
| 4. | * | Interpersonal Awareness | .24 | 4.67 | .033 | .46 | .21 | .17 | .042 | 5.36 | .001 |
| 5. | * | Social Problem-Solving | .33 | 10.49 | .002 | .54 | .29 | .25 | .084 | 7.28 | .001 |
| 6. | * | Stress | -.29 | 5.74 | .019 | .58 | .34 | .29 | .044 | 7.35 | .001 |
| 7. | * | Interpersonal Awareness x Stress | | 8.60 | .004 | .63 | .40 | .35 | .060 | 8.08 | .001 |
| | | Intelligence x Stress | | 4.09 | .056 | .65 | .42 | .37 | .023 | 7.84 | .001 |
| | | Sex x Stress | | 1.80 | .183 | .66 | .44 | .38 | .012 | 7.23 | .001 |
| | | Social Problem-Solving x Interpersonal Awareness | | 1.00 | .319 | .67 | .44 | .38 | .007 | 6.61 | .001 |
| | | Social Problem-Solving x Stress | | .93 | .338 | .67 | .45 | .38 | .006 | 6.09 | .001 |
| | | Age x Stress | | .42 | .519 | .67 | .45 | .37 | .003 | 5.58 | .001 |

*Independent variable making a statistically significant contribution to the prediction of behavioral competence.

TABLE 8

Results of Multiple Regression Analysis Set A for the Prediction of Academic Competence

DEPENDENT VARIABLE--ACADEMIC COMPETENCE

| Step | | Independent Variable | Simple r | F | Signif. Level | Multiple r | r Square | Adjusted r Square | r Square Change | Overall F | Overall Signif. Level |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | | Sex | .00 | .00 | .972 | .00 | .00 | -.01 | .000 | .00 | .972 |
| 2. | | Age | .13 | 1.62 | .207 | .13 | .02 | -.01 | .013 | .81 | .449 |
| 3. | * | Intelligence | .66 | 30.66 | .001 | .70 | .48 | .47 | .466 | 27.24 | .001 |
| 4. | * | Interpersonal Awareness | .58 | 5.37 | .023 | .72 | .51 | .50 | .030 | 22.80 | .001 |
| 5. | | Social Problem-Solving | .43 | 1.60 | .209 | .72 | .52 | .49 | .009 | 18.60 | .001 |
| 6. | | Stress | .12 | .12 | .728 | .72 | .52 | .52 | .001 | 15.43 | .001 |
| 7. | * | Intelligence x Stress | | 6.20 | .015 | .75 | .56 | .52 | .033 | 14.93 | .001 |
| | | Social Problem-Solving x Interpersonal Awareness | | 1.54 | .218 | .75 | .57 | .53 | .003 | 13.34 | .001 |
| | | Interpersonal Awareness x Stress | | 1.77 | .187 | .76 | .57 | .53 | .009 | 12.17 | .001 |
| | | Age x Stress | | 1.16 | .283 | .76 | .58 | .53 | .006 | 11.09 | .001 |
| | | Social Problem-Solving x Stress | | 1.37 | .245 | .77 | .59 | .53 | .007 | 10.25 | .001 |
| | | Sex x Stress | | .02 | .902 | .77 | .59 | .53 | .000 | 9.28 | .001 |

*Independent variable making a statistically significant contribution to the prediction of academic achievement.

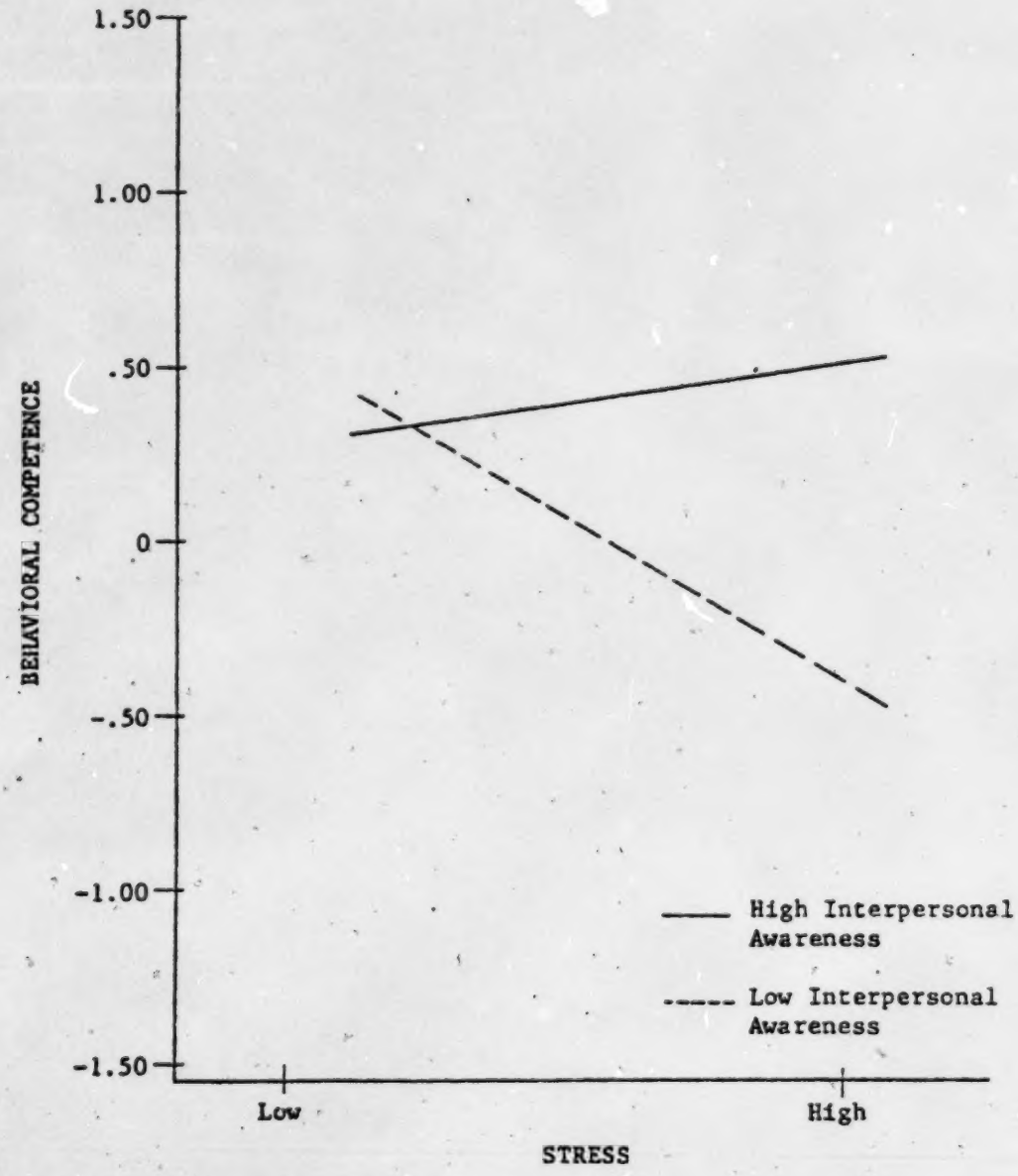


**Figure 1.** The Interaction Between Interpersonal Awareness and Stress with Regard to Behavioral Competence

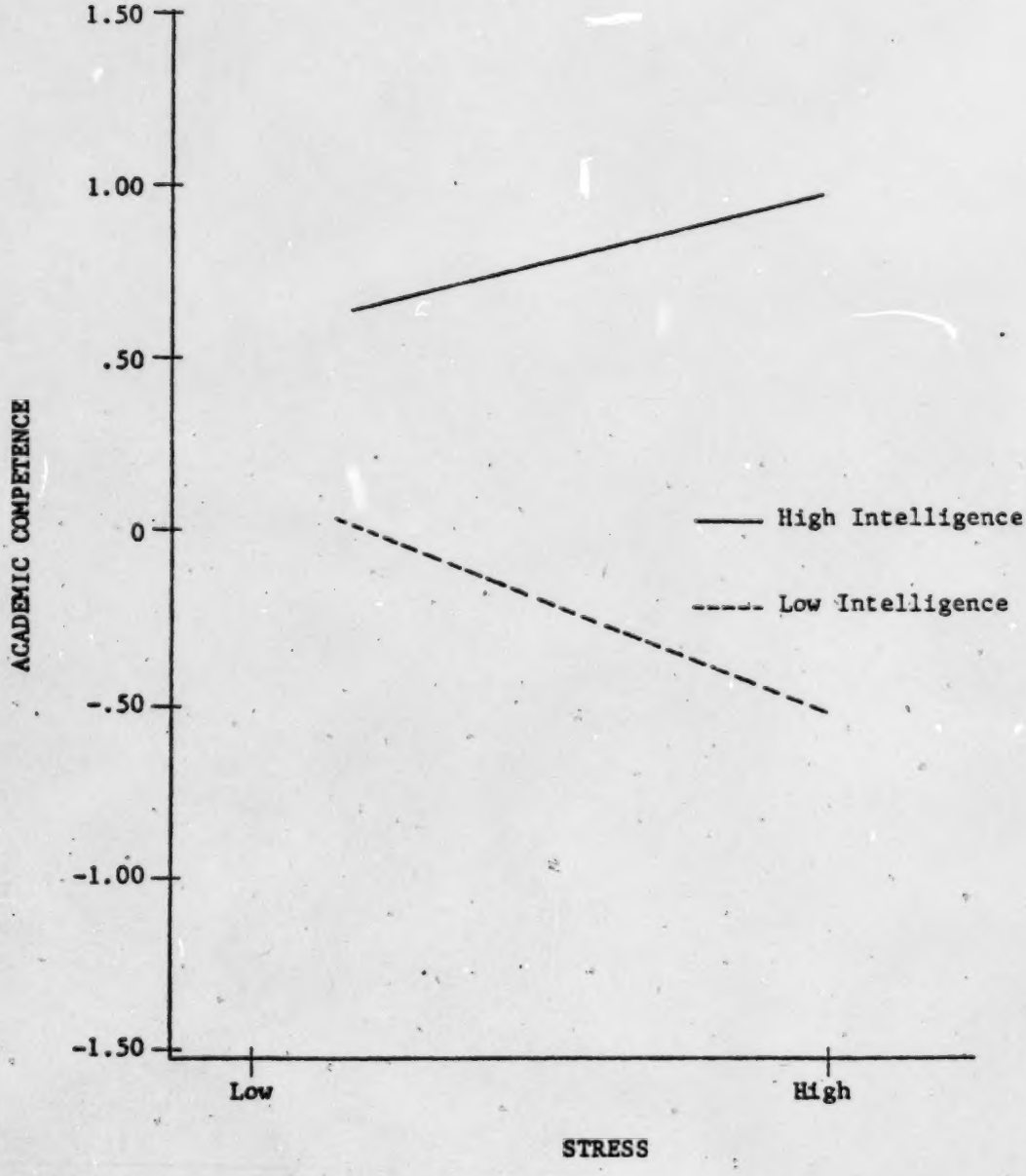


**Figure 2.** The Interaction Between Sex, Social Problem-Solving Ability, and Stress with Regard to Academic Competence.